

IN THE CLAIMS

1. (Previously presented) A non-compliant medical balloon, where the non-compliant medical balloon may be changed from a deflated state to an inflated state by increasing pressure applied to an interior surface of the balloon, comprising:
 - a first fiber layer having fibers and at least one fiber disposed along a longitudinal length of the non-compliant medical balloon;
 - a second fiber layer having fibers, the second fiber layer disposed over said first fiber layer such that the fibers of the first fiber layer and the fibers of the second fiber layer form an angle;
 - a binding layer that secures the first fiber layer to the second fiber layer so that the first and second fiber layers are restricted from substantial relative movement during inflation and deflation;
wherein the interior surface area of the non-compliant medical balloon remains substantially unchanged when the balloon changes from a deflated state to an inflated state.
2. (Original) The non-compliant medical balloon of claim 1, wherein said first fiber layer comprises inelastic fibers.
3. (Original) The non-compliant medical balloon of claim 1, wherein said first fiber layer comprises a plurality of parallel first fibers.
4. (Original) The non-compliant medical balloon of claim 1, further comprising an adhesive layer adhering to said first fiber layer.
5. (Original) The non-compliant medical balloon of claim 1, wherein said second fiber layer comprises a plurality of parallel second fibers.
6. (Original) The non-compliant medical balloon of claim 1, wherein said angle is substantially a right angle.
7. (Original) The non-compliant medical balloon of claim 1, wherein said angle does not change when the balloon changes from a deflated state to an inflated state.
8. (Original) The non-compliant medical balloon of claim 3, wherein said plurality of parallel first fibers are substantially parallel to the longitudinal axis of the balloon.
9. (Original) The non-compliant medical balloon of claim 5, wherein said plurality of parallel second fibers are substantially transverse to the longitudinal axis of the balloon.

10. (Original) The non-compliant medical balloon of claim 1, wherein said binding layer is a polymeric coating.

11. (Original) The non-compliant medical balloon of claim 10, wherein said polymeric coating is formed of a polymer.

12. (Original) The non-compliant medical balloon of claim 10, wherein said polymeric coating is formed of a copolymer.

13. (Original) The non-compliant medical balloon of claim 3, wherein said parallel first fibers each have a thickness of about 0.0005 inch.

14. (Original) The non-compliant medical balloon of claim 5, wherein said parallel second fibers each have a thickness of about 0.0005 inch.

15. (Original) The non-compliant medical balloon of claim 5, wherein said parallel second fibers have a wind density of approximately 50 wraps per inch.

16. (Previously presented) The non-compliant medical balloon of claim 1, wherein said angle is about eighty degrees.

17. (Original) The non-compliant medical balloon of claim 1, further comprising a third fiber layer on said second fiber layer.

18. (Previously presented) A non-compliant medical balloon, comprising:
a base layer having a polymer that extends along a longitudinal axis of the balloon;
a first fiber positioned over the base layer in parallel relation to the longitudinal axis of the balloon, the first fiber having a first fiber length corresponding to a longitudinal length of the balloon;

a second fiber wound radially over the base layer and over the first fiber along at least a portion of the longitudinal axis of the balloon; and

a film that secures the first fiber to the second fiber so that the first fiber and second fiber are restricted from substantial relative movement during inflation and deflation of the balloon.

19. (Previously presented) The non-compliant medical balloon of claim 18, wherein the film comprises a polyimide film.

20. (Previously presented) The non-compliant medical balloon of claim 18, wherein the second fiber is positioned substantially perpendicular to the first fiber.

21. (Previously presented) The non-compliant medical balloon of claim 18, wherein the first fiber comprises a plurality of fibers and each are substantially equal in length to the longitudinal length of the base layer.
22. (Previously presented) The non-compliant medical balloon of claim 18, wherein the second fiber extends over a longitudinal length of the base.
23. (Previously presented) The non-compliant medical balloon of claim 18, wherein the first fiber comprises a plurality of first fibers, wherein each of the fibers is substantially equally spaced from each other, and wherein the second fiber is substantially equally spaced in each of its radial winds about the base.
24. (Previously presented) The non-compliant medical balloon of claim 18, wherein the first fiber and the second fiber are inelastic.
25. (Previously presented) The non-compliant medical balloon of any one of claims 18, 22-24, wherein the fibers are comprised of a material selected from the group consisting of Kevlar, Vectran, Spectra, Dacron, Dyneema, Terlon (PBT), Zylon (PBO), Polyimide (PIM), or ultra high molecular weight polyethylene and combinations thereof.
26. (Previously presented) The non-compliant medical balloon of claim 18, wherein the film is comprised of a polymer or a copolymer.
27. (Previously presented) The non-compliant medical balloon of claim 26, wherein at least one of the base and the film are comprised of polyethylene, polyethylene terephthalate (PET), polycaprolactam, polyester, polyether, polyamide, polyurethane, polyimide, ABS copolymer, polyester/polyether block copolymer, ionomer resin, liquid crystal polymer, or rigid rod polymer.
28. (Previously presented) The non-compliant medical balloon of claim 18, further comprising an adhesive, wherein the adhesive adheres the fibers of the first fiber to the base.
29. (Previously presented) The non-compliant medical balloon of claim 18, wherein the first fiber comprises from about 15 to about 30 fibers disposed adjacent to each other.
30. (Previously presented) The non-compliant medical balloon of claim 21, wherein each of the first fibers has a thickness in the range of about 0.0005 to about 0.001 inch.
31. (Previously presented) The non-compliant medical balloon of claim 18, wherein the second fiber has a thickness in the range of about 0.0005 to about 0.001 inch.

32. (Previously presented) The non-compliant medical balloon of claim 18, wherein the second fiber has a wind density in the range of about 50 to 80 wraps per inch.
33. (Previously presented) The non-compliant medical balloon of claim 18, wherein the second fiber has a length in the range of about 75 to about 100 inches.